

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 1, 2018/2019

**TCN2141 – COMPUTER NETWORKS**  
(All sections / Groups)

13 OCTOBER 2018  
2.30 p.m. – 4.30 p.m.  
(2 Hours)

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### INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages with 5 Questions only
2. Attempt **ALL FIVE** questions.
3. All questions carry equal marks and the distribution of the marks for each question is given.
4. Please print all your answers in the Answer Booklet provided.

**QUESTION 1**

- a) Given a host IP address with CIDR as 181.32.119.3 /20. As the network administrator, find the following information?
- What is the given current IP address subnet range?
  - What is the subnet number for the 4<sup>th</sup> subnet?
  - What is the subnet broadcast address for 3<sup>rd</sup> subnet?
  - What are assignable addresses for the 9<sup>th</sup> subnet?
  - How many usable hosts per subnet?
- b) What is the purpose of ARP? Describe how ARP works.
- c) What is three-way handshake? Why virtual circuit approach require three-way handshake process?

[5 + 2 + 3 = 10 Marks]

**QUESTION 2**

- a) Consider sending a 5420-byte datagram into a link that has a MTU of 1220 bytes. Suppose the original datagram is stamped with the identification number 211516 as shown in table below (Original IP datagram). How many fragments are generated? What are the values in the various fields in the IP datagram(s) generated related to fragmentation? Use IP fragments table below to give your answer.

Original IP Datagram							
Sequence	Identifier	Total Length	DF	MF	Offset		
AB	211516	5420	0	0	0		
IP Fragments (Ethernet)							
Sequence	Identifier	Total Length	DF	MF	Offset		

Continued...

- b) Briefly describe the use of subnet mask and supernet mask with reference to a default mask in classful addressing?
- c) Briefly explain the differences between Circuit Switching and Virtual Circuit Packet Switching.

[6 + 2 + 2 = 10 Marks]

### QUESTION 3

- a) What are the TWO basic approaches used to perform a distributed route computation, and how does each work?
- b) What is a routing loop?
- c) Briefly describe Split Horizon Technique.
- d) Distinguish between structured and unstructured decentralized P2P networks.

[4 + 2 + 2 + 2 = 10 Marks]

### QUESTION 4

- a) A multicast address for a group is 231.185.58.10. What is its 48-bit Ethernet address for a LAN using TCP/IP?
- b) Congestion control provides mechanism that can prevent congestion before it happens. Briefly describe FOUR(4) open-loop congestion control policies.
- c) Give the shorter version of the IPv6 address?
  - i. 2001:1934:0101:0000:0000:0000:0035
  - ii. 2001:A0D3:0000:0000:0343:0000:0000:0323
- d) Explain Network Address Translation (NAT) and state one of its benefits.

[2 + 4 + 2 + 2 = 10 Marks]

Continued...

**QUESTION 5**

- a) The following is a dump of a TCP header in hexadecimal format.

04320013 00000021 00000000 50020AB5 00000000

- i. What is the source port number?
  - ii. What is the destination port number?
  - iii. What the sequence number?
  - iv. What is the acknowledgment number?
  - v. What is the length of the header?
  - vi. What is the type of the segment?
  - vii. What is the window size?
  - viii. What is checksum value?
- b) List the THREE(3) IPv6 address types, and give a brief explanation of each.
- c) What is the role of Network Management System (NMS) of SNMP? Give TWO(2) advantages of implementing SNMP function in network.

[4 + 3 + 3= 10 Marks]

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